DOCUMENT RESUME

ED 259 325 CS 008 118

AUTHOR Walter, Eileen L.
TITLE A Study of Four Teachers' Questioning Strategies during Second and Third Grade Basal Reading and Literature Lessons.
PUB DATE Jul 85
NOTE 84p.; Paper presented at the Annual Meeting of the National Reading Conference (33rd, Austin, TX, November 29-December 3, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Basal Reading; Cognitive Style; Comparative Analysis; Elementary Education; Grade 2; Grade 6; Literature Appreciation; *Questioning Techniques; Reading Ability; *Reading Comprehension; *Reading Instruction; *Reading Research; Student Reaction; *Teacher Behavior; Teacher Education; *Teaching Methods

ABSTRACT

To investigate whether teachers asked questions during reading lessons in order to evaluate rather than teach comprehension, the discourse of 11 reading lessons was audiotaped in four elementary school classrooms. Transcripts of the lessons were analyzed to identify the function and source of teacher questions and the accuracy, cognitive level, and convergence or divergence of student responses. Variations in teacher questions and student responses were examined with respect to grade level (second and sixth), ability level (4 reading levels in grade 2), type of lesson (basal and literature), and teacher training (participant and nonparticipant in Great Books Leader Training Course). The least differences in teacher questioning strategies were found among basal lessons, although grade level had an effect on the source of teacher questions. The greatest differences were found among literature lessons, with grade level and teacher training contributing to variations in the source of teacher questions and the accuracy, cognitive level, and convergence/divergence of student responses. (A number of tables are appended.) (Author/HOD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

BEST COPY AVAILABLE

ED259325

A STUDY OF FOUR TEACHERS' QUESTIONING STRATEGIES DURING SECOND AND THIRD GRADE BASAL READING AND LITERATURE LESSONS

by

Eileen L. Walter

The University of Arizona

Tucson, Arizona

1983

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Research presented at the National Reading Conference (33rd, Austin, TX, November 29-December 3, 1983). Report submitted to Catalina Foothills School District, Tucson, AZ, July 1985.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Eileen Walter

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CS 008118

Abstract

Research has indicated that teachers ask questions during reading lessons in order to evaluate rather than teach comprehension. This study investigates this premise by analyzing the discourse of reading lessons where stories are read and/or discussed. Eleven lessons were audio-taped in four classrooms in a school in a small suburban school district in the Southwest. Transcripts of the lessons were analyzed to identify the function and the source of teacher questions and the accuracy, the cognitive level, and the convergence or divergence of student responses. Variations in teacher questions and student responses were examined with respect to grade level (2nd and 6th), ability level (4 reading levels in grade 2), type of lesson, (basal and literature), and teacher training (participant and non-participant in Great Books Leader Training Course). It was found that the teachers differed in their question strategies along some of these dimensions. The least differences were found among basal lessons, although grade level had an effect on the source of teacher questions. The greatest differences were found among literature lessons, with grade level and teacher training contributing to variations in the source of teacher questions and the accuracy, cognitive level, and convergence/divergence of student responses. The type of lesson had an effect on the accuracy of student responses in the second grade and on the convergence/divergence of student responses in the sixth grade. Ability level had an effect on the source of teacher questions and the accuracy and cognitive level of student responses. Although the results cannot be generalizable to all 2nd and 6th grade basal or literature lessons, the variations indicate that teachers are not asking questions for the same reasons but vary their questions in order to accomplish different aims. Evaluation may be one aim, but not the only aim. Further research will be needed to identify teachers' reasons for asking different kinds of questions.

Introduction

Questions play an important role in classroom instructional processes. Not only do teacher questions predominate in classroom discourse, but teachers use questions for a variety of purposes, including the evaluation of student learning, the development of students' thinking processes, and the management of classroom lessons. However, studies of classroom instruction have revealed that teachers ask questions in order to evaluate student learning and not to develop their thinking processes and that the majority of questions require convergent thinking, involving the recall or recognition of facts and not divergent thinking, involving inferences, opinions, or judgments. Teacher questions have not been studied with respect to the management of classroom lessons. (Durkin, 1978; Gall, 1970; Guszak, 1967).

Many attempts have been made to remedy this situation. Instructional aids and training programs have been developed for the improvement of teachers' questioning practices. In order to assist teachers in reading comprehension instruction, taxonomies of comprehension skills have been developed which identify the different levels of reasoning required in comprehending what is read. Guides to questioning strategies have been based on these taxonomies. For example, Sanders' Classroom Questions, What Kinds? (1966), Hunkins' Involving Students in Questioning (1976), and Hyman's Strategic Questioning (1979) are some of the more well known guides. In addition, basal reading series now provide teachers with literal, interpretive, and evaluative questions to guide students' reading and evaluate students' comprehension.

Research investigating the effects of instructional programs for teachers indicates that teachers increase their use of higher level questions after training. However, recent research indicates that, generally speaking, teachers have not changed their questioning practices during classroom lessons in spite of the support and guidance given teachers over the years. (Chou-Hare and Pulliam, 1980; Dunkin and Liddle, 1974; Sirotnik, 1983).

This state of affairs suggests that we need to look more closely at what teachers do during reading instruction. While studies of the effect of teacher questions on student cognitive performance and academic achievement have provided conflicting results, they have demonstrated that other variables besides the cognitive level of questions may have an influence on student performance, e.g., the function of teacher questions, teacher/pupil interaction, and the sequential organization of discourse (Green, 1977; Morine-Dershimer and Tenenberg, 1981; Taba, 1966).

This report is a preliminary analysis of data from a study of reading and literature lessons where stories are read and/or discussed. The purpose of this report is, first of all, to describe teacher questioning strategies as part of the larger framework of the oral and written discourse. Transcripts of the lessons were analyzed to identify the function and the source of teacher questions and the accuracy, the cognitive level, and the convergence or divergence of student responses. These are variables that have been used to describe teacher questions in previous research.

In addition, variation in questioning strategies was examined with respect to grade level (2nd and 6th), ability level (4 reading levels at grade 2), type of lessons (reading and literature), and training in discussion techniques (Great Books Leader Training Course). Specifically, it

was hypothesized that teachers' questioning strategies would vary along these dimensions. The research questions addressed were:

(1) Do teachers (N=4) ask similar or different types of questions at different grade levels (grades 2 and 6)?

(2) Does a teacher (N=1) ask similar or different types of questions with groups of different ability levels in reading (grade 2: levels 2-1 to 3-2)?

(3) Do teachers (N=4) ask similar or different types of questions during reading and literature lessons in grades 2 and 6?

(4) Do teachers (N=4) with and without Great Books training ask similar or different types of questions in grades 2 and 6?

Method

Subjects

Two second grade and two sixth grade teachers from a small suburban school district in the Southwest volunteered to participate in the study. In one second grade class, four groups reading above, at, or below grade level and one literature group of mixed levels were observed and audio-taped. In the other second grade, the same group reading at grade level was observed and taped during a reading lesson and a literature lesson. In the sixth grade classes observations and tapes were made of a middle reading group (reading above grade level) and a literature group of mixed reading levels.

Data Collection

Eleven reading and literature lessons in all were observed and audio-taped during the Spring of 1983. Each class was observed once in February

during their normal reading time. Teaching procedures and physical environments were recorded during the observational period. Arrangements were made with each teacher for audio-taping lessons where a story was read and/or discussed. Lessons were audio-taped over a three month period (March to May). In order to obtain naturally occurring data, the teachers were directed to teach their lessons following their normal routines and using their regular curriculum materials. Follow-up questionnaires and interviews did not reveal any atypical or unexpected occurrences in classroom routines, teacher behavior, or student behavior. Although some teachers seemed to be conscious of noise and interruptions during the taping, it was considered part of the normal classroom environment.

Materials

Each reading group read and/or discussed a story from a basal reading series used as part of the regular reading program (Refer to Appendix A for a list of the stories). Stories were not pre-selected by the teacher or researcher but were those that occurred next in sequence as each story was read in the basal text. Each literature group read and/or discussed a book or part of a book used in the regular literature or Great Books programs. Thus, all references to literature lessons will include the use of books in both programs.

Instrument

In order to identify teachers' questioning strategies, teachers' questions were classified by function, being either substantive (i.e., concerning the subject matter) or procedural (i.e., concerning the instructional process). Substantive questions were further classified by their source

and the accuracy, cognitive level, and number of student responses. Questions were classified in terms of the source to which they refer, i.e, text (the story read), script (student prior knowledge), text-script (a combination of story read and student knowledge), and discourse (what was previously said in the lesson). Questions were also classified by the accuracy of student responses, being either correct, incorrect, or none; the cognitive level of student responses, being either low or high; and the number of student responses to a question, being either convergent or divergent. Responses at a low cognitive level are explicitly found in the text and/or script. Responses at a high cognitive level are implicitly found in text and/or script. The convergence or divergence of questions were classified in terms of the number of student responses to a teacher question. Questions which receive one unique response are convergent. Questions which receive more than one unique response are divergent.

Frequencies and proportions were tabulated for each category in each lesson. Average frequencies and proportions were then computed by grade level (N=2), by type of lesson (N=2), and for literature lessons by Great Books training (N=2). The relative amount of variation was determined using the following scale:

Negligible Variation	1.0% or less
Slight Variation	1.1% - 5.0%
Some Variation	5.1% - 10.0%
Appreciable Variation	10.1% - 15.0%
Substantial Variation	15.1% or more

This scale is arbitrary, i.e., not based on research, but it is only used for comparative purposes and is not meant to indicate significant

differences. Associations were also determined between the level of the student responses and the number of responses. Student responses to questions were classified in terms of low-convergent, high-convergent, low-divergent, and high-divergent. Low-convergent questions require a single explicit response from the text and/or script. High-convergent questions require a single implicit response. Low-divergent questions require more than one explicit response. High-divergent questions require more than one implicit response.

Results and Interpretations

Teacher Questions

The Functions of Teacher Questions

Teachers use questions for a variety of purposes. One purpose is to manage the instructional interaction. These questions are often used to carry out lesson tasks, such as reading orally and taking turns, and to direct student talk, such as repeating what hasn't been heard. Such questions are classified as procedural. Another function of teacher questions is to present the content of the instructional discourse. These questions are often used to direct the instructional process by evaluating or guiding students' learning, thinking, or comprehension processes. Such questions are classified as substantive.

In the lessons observed in this study, teachers predominantly asked substantive questions, ranging from 84.5% to 100% of all questions asked. Procedural questions ranged from 0% to 15.5%. This may be attributed to the nature of lessons where discussion of stories takes place. In such lessons, little teacher direction is needed for accomplishing tasks. Instead teachers are more concerned with directing or evaluating students' learning.

There were slight variations in the average proportions of functions of teacher questions between second and sixth grade basal reading lessons (Table 1a) and between second and sixth grade literature lessons (Table 1b).

Insert Tables 1a and 1b

Second grade teachers asked proportionately more procedural questions on the average (1.8% for basal lessons; 4.3% for literature lessons). This difference, however, is slight and may be attributed to directed oral reading in the second grade lessons where teachers used the question form to give directions, such as, "would you read ---, please?"

In addition, there were slight variations in the average proportions of question functions between reading and literature lessons for second grade teachers (Table 1c) and slight variation for sixth grade teachers (Table 1d).

Insert Tables 1c and 1d

Second and sixth grade teachers asked proportionately more procedural questions on the average during basal lessons than during literature lessons (1.1% for second grade teachers; 3.6% for sixth grade teachers). For second grade lessons, this may also be attributed to directed oral reading during the basal lessons which did not occur as much during the literature lessons. As for the sixth grade teachers, the difference between the basal and literature lessons must be attributed to other factors, not yet identified. However, during sixth grade basal lessons, there was more reference to what was said in the text, allowing students' opportunity to read selected portions of the text. (Refer to the section on "The Sources of Teacher Questions" for a further discussion of text-based questions.)

Further, there were slight variations in the average proportions of question functions between lessons taught by teachers with and without Great

Books leadership training (Table 1e). This indicates that Great Books training does not affect the function of teacher questions during lessons where stories are discussed.

Insert Table 1e

Finally there were slight to some variations in the proportions of the functions of teacher questions among second grade basal reading lessons taught to groups of students reading at different levels (Table 1f).

Insert Table 1f

The teacher asked proportionately more procedural questions in the group reading at the 3-2 level and more substantive questions in the group reading at the 2-2 level. The greatest difference was between groups 3-2 and 2-2 (6.6%). This indicates that the teacher found the greatest need to direct the verbal interaction in Group 3-2 and the least need in Group 2-2. This may be attributed to the differences in text difficulty and/or to the differences in student ability. The differences, however, were not great enough to indicate different questioning strategies for groups reading at different levels. This may be attributed to similar instructional goals for the four lessons.

In summary, these teachers varied only slightly to some in the functions of their questions between grade levels, between the types of lessons, between Great Books training and no training, and between ability groups. The greatest effect, if any, may be due to the type of lesson for sixth grade and to grade level for literature lessons.

The Sources of Teacher Questions

Teachers ask questions which refer to different sources of information. One source is the story read. These questions are classified as text-based or simply text. Another source is the students' prior knowledge, i.e., what students may already have learned or experienced. Such questions ask students about their experiences which may be similar to the experiences of characters in the story. These questions are classified as script-based or script. In addition, questions may refer to both text and script. These questions ask students to draw upon their prior knowledge in order to interpret what they have read. Such questions are classified as text/script. One other source of information is the instructional discourse itself. These questions are based upon what has previously been said. Many text-, script-, and text/script-based questions can also be discourse-based. For the purposes of this study, these questions are classified only as text, script, or text/script. Questions which are only discourse-based usually remark upon what has previously been said rather than ask for new information. These questions are classified as discourse-based or discourse but are not analyzed any further.

Of the substantive questions asked which were not repeated teachers generally asked proportionately more text-based questions, ranging from 8.6% to 78.1%. Script-based questions ranged from 0% to 43.7%, text/script-based questions ranged from 2.5% to 39.8%, and discourse-based questions ranged from 4.4% to 23.3%. The higher proportion of text-based questions may be attributed to the instructional goals of the lessons. In reading lessons where stories are discussed, teachers are concerned with students'

comprehension of the story read. They, therefore, asked predominantly text-based questions either to direct or to evaluate students' comprehension. However, the teachers also asked script- and text/script-based questions. This suggests that teachers were asking questions to direct students' comprehension by relating the content of the stories to the students' own experiences (script-based questions) and to guide students' reasoning processes by having students use their prior knowledge to interpret what they have read (text/script-based questions). In addition, the teachers asked discourse-based questions which remarked upon what was just said, suggesting that the teachers were concerned with directing and maintaining student participation in the discourse.

There were substantial variations in the average proportions of the sources of teacher questions between second and sixth grade basal reading lessons (Table 2a) and between second and sixth grade literature lessons (Table 2b).

Insert Tables 2a and 2b

In both basal and literature lessons, sixth grade teachers asked proportionately more text-based questions on the average (25.7% for basal lessons; 27.9% for literature lessons), while second grade teachers asked more script-based questions (19.4% for basal lessons; 25.3% for literature lessons). This may be partially attributed to the need to guide students' comprehension more in the second grade than in the sixth grade. In addition, proportionately more text/script-based questions were asked in sixth grade basal lessons (3.4%). Although the differences are slight, this suggests that the

second grade teachers may have been more concerned with students' interpretations of what was read during literature lessons than sixth grade teachers, while sixth grade teachers may have been more concerned during basal lessons. Finally, second grade teachers ask proportionately more discourse-based questions during basal lessons (8.0%) and literature lessons (4.3%). This may be attributed to the greater need to direct and maintain the instructional discourse during second grade lessons.

In addition, there were slight variations in the average proportions of question sources between second grade basal reading and literature lessons (Table 2c), and some variation between sixth grade basal reading and literature lessons (Table 2d).

Insert Tables 2c and 2d

For the second grade teachers similar average proportions between basal and literature lessons suggest that the teachers did not vary their questioning strategies with regard to source. Text- and script-based questions were of nearly equal proportions (37.6% to 31.2% for basal lessons; 34.2% to 30.5% for literature lessons). This may be partially attributed to a perceived need to relate the story to the students' experiences in order to guide the students' comprehension of the text. Also, equal proportions of discourse-based questions (13.3% to 14.2%) suggests that the need to direct the instructional discourse is the same for basal and literature lessons.

As for sixth grade teachers, proportionately more script- and text/script-based questions were asked in basal lessons (6.0% for script; 3.8% for text/script) and more discourse-based questions were asked in literature

lessons (4.6%). While the differences were slight, this suggests that teachers varied their questioning strategies between basal and literature lessons. This may be attributed to different instructional goals for the particular lessons or to different needs to direct students' comprehension or the instructional discourse because of a different composition of the reading levels of students between the two lessons.

Further, there were substantial variations in the average proportions of question sources between lessons taught by teachers with and without Great Books training (Table 2e).

Insert Table 2e

Teachers with Great Books training asked proportionately more text-based questions on the average (41.5%), while teachers without Great Books training asked more script-based questions (7.9%), text/script-based questions (31.6%), and discourse-based questions (17.0%). This suggests that Great Books training influences teachers' questioning strategies, but not in the way expected. Great Books discussion techniques involve the use of interpretive questions (classified as text/script in the coding scheme), but the teachers with Great Books training did not ask more text/script questions during literature lessons. This may be attributed to the fact that only one of the literature lessons used a story from the Great Books curriculum. Thus, the teachers may ask more interpretive questions during Great Books lessons rather than literature lessons in general. Also, this suggests that the teachers may be more interested in student comprehension of what is read than in their interpretive skills. However, this does not

explain the large differences in question sources between teachers. Although factors specific to these lessons have not been identified, factors which may have contributed to the variations could be differences in text difficulty, in student ability, or in teachers' instructional goals.

Finally, there were slight to appreciable variations in the proportions of the sources of teacher questions among second grade basal reading lessons taught to groups of students reading at different levels (Table 2f).

Insert Table 2f

The teacher asked proportionately more text questions in the group reading at the 3-2 level, more script questions in the group reading at the 2-2 level, more text-script questions in the group reading at the 3-2 level, and more discourse questions in the group reading at the 2-1 level. The differences were greatest between groups 3-2 and 2-2 for text questions (11.3%), between groups 2-2 and 2-1 for script questions (15.5%), between groups 3-2 and 2-1 for text-script questions (10.4%), and between groups 2-1 and 3-2 for discourse questions (14.0%). This indicates that the teacher was using different questioning strategies among the groups with respect to the question source.

In Group 3-2, the teacher more often asked questions which required students to refer to the text and to both the text and prior knowledge (text-script). This indicates that the teacher was more concerned with evaluating the students' comprehension of text. In addition, the teacher asked less script-based questions (31.5%), indicating that the students needed less guidance in comprehending text. In Group 2-1, the teacher more often asked

discourse questions which comment upon the previous utterance. This indicates that the teacher was more concerned with maintaining the verbal interaction. This may be attributed to the students' inability to interact verbally and/or to answer the teacher's questions. In addition, the teacher asked the fewest script questions and text-script questions. This may be attributed to the students' inability to draw upon their prior knowledge, so that the teacher asked a greater proportion of discourse questions to maintain the verbal interaction. Thus, the teacher varied her questioning strategies with respect to the source according to the ability or needs of the students.

In summary, these teachers varied in the sources of their questions between second and sixth grade basal reading lessons, between second and sixth grade literature lessons, between sixth grade basal and literature lessons, between teachers with and without Great Books training, and, for one teacher, among ability groups. This suggests that grade level, Great Books training, and ability level, but not type of lesson, has an effect on the sources of teacher questions.

Student Responses to Teacher Questions

Teacher questions can also be classified by the kind of student responses they received. For the purposes of this study, each text-, script-, and text/script-based question which was not repeated was characterized by the accuracy, the cognitive level, and the number of student responses received.

Accuracy of Student Responses

Teacher questions may receive correct, incorrect, or no responses. While teachers cannot control the accuracy of a student's response, an incorrect response or no response may influence the type of subsequent questions. Therefore, a large number of incorrect responses or "no responses" may indicate either that the teacher is not accommodating his/her questions to the needs of the students or the text is too difficult for the students to comprehend. In addition, a large number of "no responses" may indicate that the teacher asked questions without waiting for an answer. This can happen when the teacher rewords or adds information to a subsequent question in order to increase the students' chances for answering the question successfully.

For the lessons observed, proportionately more teacher questions received correct responses, ranging from 56.9% to 86.8%. The proportion of questions which received incorrect responses ranged from 0% to 23.1% and "no responses" ranged from 5.9% to 42.1%. This indicates that the teachers varied in the effectiveness of their questions with respect to the accuracy of the students' responses. In addition, the variation in the proportion of "no responses" may indicate different questioning strategies for increasing student success in answering questions.

There was some variation in the average proportions of correct and incorrect responses to teacher questions between second and sixth grade basal reading lessons (Table 3a) and appreciable variation in the proportions of correct and nc responses to teacher questions between second and sixth grade literature lessons (Table 3b).

Insert Tables 3a and 3b

In the basal lessons, second grade teachers' questions received proportionately more correct responses on the average (6.6%), while sixth grade teachers' questions received more incorrect responses (5.6%) and more "no responses" (1.0%). This may be partially attributed to the second grade teachers more often accommodating their questions to the needs of the students and to the sixth grade teachers asking more difficult questions. Although teachers at both grade levels asked a similar proportion of questions which did not receive a response, this may or may not indicate similar questioning strategies because teachers' questions may receive 'ho responses" for different reasons. Question-response sequences would need to be analyzed in order to determine if teachers' questioning strategies are indeed the same.

In the literature lessons, sixth grade teachers' questions received proportionately more correct responses on the average (12.9%) and more incorrect responses (1.6%), while second grade teachers' questions received more "no responses" (15.1%). This seems to indicate that the sixth grade teachers' questioning strategies were more effective than the second grade teachers' during literature lessons.

In addition, there was appreciable variation in the average proportions of correct and "no responses" to teacher questions between second grade basal reading and literature lessons (Table 3c) and some variation in the proportions of correct and incorrect responses to teacher questions between sixth grade basal reading and literature lessons (Table 3d).

Insert Tables 3c and 3d

In the second grade, teachers' questions received proportionately more correct responses on the average (11.8%) and more incorrect responses (2.1%) during basal lessons and more "no responses" (14.7%) during literature lessons. This indicates that the second grade teachers' questions were more effective with respect to the accuracy of students' responses in basal lessons. This may be attributable to the differences in difficulty between basal and literature texts and the level of difficulty of teachers' questions. (Refer to the section, "The Cognitive Level of Student Responses", for further discussion of question difficulty.)

In the sixth grade, teachers' questions received proportionately more correct responses on the average during literature lessons (7.8%) and more incorrect responses (6.3%) and "no responses" (1.4%) during basal lessons. This indicates that sixth grade teachers' questions were more effective during literature lessons. However, differences were only slight. There may be less difference in the effectiveness of sixth grade teachers' questions than second grade teachers' because there is less difference in difficulty between basal and literature texts at the sixth grade level than at the second grade level. In addition, sixth grade students have had more experience reading literature.

Further, there were some to substantial variations in the average proportion of correct, incorrect, and no responses to teacher questions between lessons taught by teachers with and without Great Books training (Table 3e).

Insert Table 3e

Teachers without Great Books training asked questions which received proportionately more correct responses on the average (12.4%) but also more incorrect responses (8.2%), while teachers with Great Books training received more "no responses" (21.1%). This may be attributed to the greater difficulty of questions asked in literature lessons by teachers with Great Books training. However, rather than receiving incorrect responses, these teachers' questions received no response more often.

Finally, there were negligible to appreciable variations in the proportions of correct, incorrect, and no responses to teacher questions among second grade basal reading lessons taught to groups of students reading at different levels (Table 3f).

Insert Table 3f

The teacher asked questions which received proportionately more correct responses in the group reading at the 3-1 level, more incorrect responses in the group reading at the 3-2 level, and more "no responses" in the group reading at the 2-1 level. The differences were greatest between groups 3-1 and 2-1 for correct responses (11.2%), between groups 3-2 and 2-1 for incorrect responses (3.6%), and between groups 2-1 and 3-1 for "no responses" (11.8%). This indicates that the students in groups 3-2 and 2-1 found the greatest difficulty in answering the teacher's questions. However, in Group 3-2 the students gave incorrect responses more often, and in Group 2-1 the students gave "no responses" more often. This may be attributed to the differences in risk-taking of the students so that students in Group 3-2 were

more willing to take risks. However, a high proportion of 'ho responses" to teacher questions may also indicate that the teacher asked a series of questions without waiting for a response. This may be attributed to the need, as perceived by the teacher, to reword or add information to make a question easier to answer. Thus, it appears that the teacher varied her questioning strategies with respect to question sources according to the needs or the perceived needs of the students.

In summary, these teachers' questions varied in the accuracy of the students' responses between second and sixth grade basal reading lessons, between second and sixth grade literature lessons, between second grade basal and literature lessons, between teachers with and without Great Books training and, for one teacher, among ability groups. This suggests that grade level, Great Books training, and for second grade, type of lesson and ability level have an effect on teacher questions with respect to the accuracy of student responses.

Number of Student Responses

Each teacher question can also be classified by the number of student responses it receives. Some questions require a single answer. These questions usually elicit facts. Such questions are classified as convergent. Other questions can receive more than one possible answer. Usually the number of possible answers is limited by the information at hand. These questions may elicit inferences as well as facts. However, some questions can receive an unlimited number of answers. These questions usually elicit opinions or judgments. Such questions are classified as divergent. Thus,

teachers that ask predominantly convergent questions want students to provide specific answers, either factual or inferential. These are often termed "known information" or "closed" questions to which the teacher already knows the answer. These teachers may be asking questions in order to evaluate the students' comprehension. On the other hand, teachers that ask a large number of divergent questions want the students to think critically or creatively. These teachers are probably asking questions to guide students' comprehension and thinking processes. Teachers usually ask a combination of these two types of questions.

For the purposes of this study, each teacher question which received a response was classified by the number of unique and correct responses received. If the teacher question received only an incorrect response or no response, it was identified as noncodable. The proportion of teachers' convergent questions ranged from 53.1% to 80.3%. The proportion of divergent questions ranged from 13.2% to 34.4%.

There was some variation in the average proportion of convergent responses between second and sixth grade basal reading lessons (Table 4a) and appreciable variations in the average proportions of convergent and divergent responses between second and sixth grade literature lessons (Table 4b).

Insert Tables 4a and 4b

For both types of lessons, second grade teachers asked proportionately more convergent questions on the average than sixth grade teachers (9.1% for basal lessons; 11.0% for literature lessons), while sixth grade teachers

asked more divergent questions (1.4% for basal lessons; 10.3% for literature lessons). This indicates that sixth grade teachers asked more questions that elicited critical or creative responses, especially during literature lessons. It must be noted at this point that the teachers may have asked questions which could have received more than one unique response but actually received only one. However, teacher questions in this study were only classified by the actual student responses.

In addition, there was slight variation in the average proportion of divergent questions between second grade basal reading and literature lessons (Table 4c) and appreciable variation between sixth grade basal reading and literature lessons (Table 4d).

Insert Tables 4c and 4d

In the second grade, the average proportion of teachers' convergent questions were not different between basal and literature lessons (0.1%) and there were proportionately only slightly more divergent questions on the average during literature lessons (2.1%). This indicates that second grade teachers did not vary their questioning strategies with respect to the number of student responses between the two types of lessons. In the sixth grade, there were proportionately slightly more convergent questions on the average during basal lessons (2.0%) and more divergent questions during literature lessons (9.0%). This indicates that sixth grade teachers tended to ask more questions which elicited critical or creative thinking during literature lessons than during basal reading lessons.

Further, there was appreciable variation in the average proportion of convergent questions between literature lessons taught by teachers with and without Great Books training (Table 4e).

Insert Table 4e

Teachers with Great Books training asked proportionately more convergent questions on the average (13.5%), while teachers without Great Books training asked more divergent questions (4.7%). This indicates that Great Books training does not influence teachers' questioning strategies with respect to convergence/divergence in the direction expected. Great Books discussion techniques involve the use of questions which do not require a single correct answer. It is important to note that only one teacher taught a Great Books lesson, and this may have affected the results. However, this does not completely explain the direction of the results. Although specific factors have not been identified, the difference does indicate that factors other than the use of specific discussion techniques can influence the kinds of questions teachers ask. Some of these factors have previously been mentioned, such as text difficulty, student ability, and instructional goals.

Finally, there were negligible to some variations in the proportions of convergent and divergent responses to teacher questions among second grade basal reading lessons taught to groups of students reading at different levels (Table 4f).

Insert Table 4f

The teacher asked questions which received proportionately more convergent responses in the groups reading at the 2-1 and 2-2 levels and more divergent responses in the group reading at the 3-1 level. The differences were greatest between groups 2-2 and 2-1 versus 3-1 for convergent responses (2.5%) and between groups 3-1 and 3-2 for divergent responses (5.3%). This indicates that the teacher tended to vary her questions with respect to the convergence/divergence of student responses according to the reading levels of the students. However, variations were not great enough to indicate different questioning strategies. This can be attributed to similar instructional goals and/or student needs. Any variations which occurred may be attributed to the differences in text difficulty.

In summary, these teachers' questions varied in the number of correct responses received between second and sixth grade basal reading lessons, between second and sixth grade literature lessons, between sixth grade basal reading and literature lessons, and between teachers with and without Great Books training. This suggests that grade level, type of lesson for sixth grade, and Great Books training have an effect on the convergence/divergence of teachers' questions.

The Cognitive Level of Student Responses

Teacher questions can be characterized by the cognitive level of student responses expected or actually received. Some questions require an answer that is explicitly stated in the text or explicitly known from prior knowledge. These questions only require recognition or recall of factual information. Such questions are classified as low level. Other questions require an answer that is implicitly stated in the text or implicitly known

from prior knowledge. These questions require inferences from the information at hand. Such questions are classified as high level. For the purposes of this study, the proportion of teacher questions were classified by the cognitive level of student responses received which were correct. Student responses which could not be classified as either low or high were classified as noncodable. Not all student responses, however, were coded because a teacher question that received more than one response was coded for the combined levels of all responses received, so that a question was not coded as receiving responses at both a low and a high level. Such a question, therefore, was classified as noncodable for this study. However, very few teacher questions received both low and high level responses. In this study, the proportion of low level responses to teacher questions ranged rom 7.1% to 53.3% and high level responses ranged from 40% to 89.3%. This indicates that the teachers tended to ask more high level questions.

There were slight to some variations in the average proportions of low and high level responses to teacher questions between second and sixth grade basal lessons (Table 5a) and appreciable variations between second and sixth grade literature lessons (Table 5b).

Insert Tables 5a and 5b

During basal lessons, second grade teachers' questions received proportionately more low level responses on the average (9.1%), while sixth grade teachers' questions received slightly more high level responses (3.7%). Since the differences were only slight, teachers' questioning strategies tended to be similar with respect to the cognitive level of responses

received. This may be attributed to similar instructional goals for teachers at both grade levels.

During literature lessons, second grade teachers' questions received proportionately more low level responses on the average than sixth grade teachers' (10.0%), while sixth grade teachers' questions received more high level responses (12.0%). This may be attributed to the greater difficulty of stories read during literature lessons, so that the second grade students were less able to give high level responses. It may also indicate that second grade teachers asked fewer questions that required high level responses. However, second grade teachers' questions received a slightly greater proportion of high level responses than low level responses (52.7% to 47.2%). This indicates that second grade teachers' questions received high level responses but not to the same extent as sixth grade teachers' (64.7% to 30.2%).

In addition, there were slight variations in the average proportion of low and high level responses to teacher questions between second grade basal reading and literature lessons (Table 5c) and slight to some variations between sixth grade basal reading and literature lessons (Table 5d).

Insert Tables 5c and 5d

In the second grade, teachers' questions received proportionately more low level responses on the average during literature lessons (3.4%). Although these differences are not as expected, they were slight, indicating that teachers' questioning strategies were probably similar between the

the two types of lessons and that students functioned at the same cognitive level in both lessons.

In the sixth grade, teachers' questions received proportionately more low level responses on the average during basal lessons (4.5%) and more high level responses during literature lessons (6.2%). These differences are as expected. However, the differences were too slight to indicate any real variation in the teachers' questioning strategies or in the students' cognitive functioning.

Further, there were substantial variations in the average proportions of low and high level responses to questions between literature lessons taught by teachers with and without Great Books training (Table 5e).

Insert Table 5e

Teachers with Great Books training asked questions which received proportionately more low level responses on the average (29.0%) and teachers without Great Books training asked questions which received more high level responses (30.0%). This indicates that Great Books training does not influence teachers' questioning strategies with respect to the cognitive level of student responses in the direction expected. Great Books discussion involves the use of questions which require interpretive responses, although not questions that ask for opinions or judgments. It may be that these types of questions are asked but receive only low level responses because they are more difficult to answer. Whereas, teachers without Great Books training may be asking high level questions that only require inferences, opinions, or judgments based on students' prior knowledge rather than

interpretations of the text. A more refined analysis of the cognitive level of teacher questions would be needed to determine this.

Finally, there were negligible to substantial variations in the proportion of low and high level responses to teacher questions among second grade basal reading lessons taught to groups of students reading at different levels (Table 5f).

Insert Table 5f

The teacher asked questions which received proportionately more high level responses in the group reading at the 3-2 level (15.1%) and more low level responses in the group reading at the 2-2 level (13.6%). This indicates that the students in group 3-2 were able to think at a higher cognitive level and/or the teacher asked more questions in Group 3-2 which required a high level response. These variations may be attributed to the differences in student needs or ability for the two groups, but differences were not as great between all the groups. In fact, the teacher had a tendency to ask more questions which required a high level response within each group. It is more likely that these variations were due to the differences in text. Thus, it appears that the teacher's questioning strategies with respect to the cognitive level of student responses were more similar than different among the groups of students reading at different levels.

In summary, these teachers' questions varied in the cognitive level of student responses received between second and sixth grade basal reading lessons, between second and sixth grade literature lessons, between sixth grade basal and literature lessons, between literature lessons taught by

teachers with and without Great Books training, and, for one teacher, among ability groups. This suggests that grade level, type of lesson for sixth grade, Great Books training, and ability level have an effect on teachers' questions with respect to the cognitive level of student responses.

Relationship between the Number and the Cognitive Level of Student Responses to Teacher Questions

Teacher questions have been characterized either by the number of student responses or the cognitive level of student responses to teacher questions. However, there appears to be a relationship between the number and the cognitive level of student responses. Teacher questions that receive a single response are most often at a low level, such as the recall of facts. Teacher questions that receive more than one response most often require a response at a high level, such as opinions and judgments. Therefore, cross-tabulations were computed between the cognitive level and the number of student responses. The results identified the frequencies and proportions of four types of responses to teacher questions; low-convergent, high-convergent, low-divergent, and high-divergent. It was expected that there would be a greater proportion of low-convergent than high-convergent responses and of high-divergent than low-divergent responses, but proportions of each type of response was also expected to vary among the teachers with respect to grade level, type of lesson, Great Books training, and ability level.

In the study, proportions of low-convergent responses to teacher questions ranged from 7.4% to 61.9%, and high-convergent responses ranged from 9,5% to 59.5%. Low-divergent responses ranged from 0% to 14.3%, and high-divergent responses ranged from 6.1% to 37.0%. This indicates that low

level responses were predominantly convergent, but that high level responses were both convergent and divergent. It is important to note that high-convergent and high-divergent responses are different. While both involve inferential reasoning, a high-convergent response is a single correct answer implicitly stated in the text or script, while a high-divergent response involves critical or creative thinking where students draw upon their prior knowledge to interpret the text (classified as text/script in terms of the question source).

There were negligible to some variations in the average proportions of the four types of responses to teacher questions between second and sixth grade basal reading lessons (Table 6a).

Insert Table 6a

Second grade teachers' questions received proportionately more low-convergent responses on the average (5.5%) than sixth grade teachers. All other variations were slight to negligible. Sixth grade teachers received more high-convergent responses (2.7%) and high-divergent responses (3.3%), while low-divergent responses were nearly equal between second and sixth grade teachers' questions (0.5%). Since differences were minimal, this indicates that second and sixth grade teachers' questioning strategies were similar with respect to the type of student responses received.

However, there were slight to appreciable variations in the average proportions of the four types of responses to teacher questions during literature lessons taught by second and sixth grade teachers (Table 6b).

Insert Table 6b

Second grade teachers' questions received proportionately more low-convergent responses on the average (6.8%) and more high-convergent responses (8.4%), while sixth grade teachers' questions received more low-divergent responses (1.6%) and more high-divergent responses (13.9%). This indicates that second and sixth grade teachers differed in their questioning strategies during literature lessons. Although both teachers asked a greater proportion of questions which received convergent responses (82.3% to 17.1% for second grade; 67.1% to 32.9% for sixth grade) and high level responses (52.7% to 47.3% for second grade; 58.2% to 41.8% for sixth grade), second grade teachers asked questions which received single inferential responses (high-convergent) and sixth grade teachers asked questions which received critical or creative responses (high-divergent).

In addition, there were slight variations in the average proportion of the four types of student responses to teacher questions between second grade basal reading and literature lessons (Table 6c), but there were negligible to substantial variations between sixth grade basal reading and literature lessons (Table 6d).

Insert Tables 6c and 6d

Second grade teachers' questions received proportionately more high-convergent responses on the average (4.6%) during basal reading lessons and more low-convergent responses (1.9%), more low-divergent responses (1.4%), and more high-divergent responses (1.3%) during literature lessons. However, since the differences between lessons are slight, this indicates that the teachers' questioning strategies between basal and literature are similar

with respect to the type of student responses received. This may be attributed to the same instructional goals and/or student needs for both types of lessons.

Sixth grade teachers' questions received proportionately more high-convergent responses on the average during basal lessons (15.7%) and more low-divergent responses (3.2%) and more high-divergent responses (11.9%) during literature lessons. The proportion of questions which received low-convergent responses were nearly the same (0.6%). Since the differences ranged from slightly to substantial, this indicates that sixth grade teachers vary their questioning strategies between basal and literature lessons. The teachers asked more questions which require critical or creative thinking (high-divergent) and recall of multiple facts (low-divergent) during literature lessons and more questions which require single inferential responses (high-convergent) during basal lessons. This may be attributed to different instructional goals between basal and literature lessons. Teachers may be more concerned with comprehension development during basal lessons, but have other concerns during literature lessons, such as the enjoyment of stories.

Further, there were some to substantial variations in the average proportions of the four types of responses to teacher questions during literature lessons taught by teachers with and without Great Books training (Table 6e).

Insert Table 6e

Teachers with Great Books training asked proportionately more questions on the average which received low-convergent responses (34.2%) and low-divergent responses (6.2%), while teachers without Great Books training asked more questions which received high-convergent responses (32.2%) and high-divergent responses (8.2%). Since the differences in some cases were substantial, this indicates that Great Books training influences the teachers' questioning strategies, but not in the direction expected. Questions asked during Great Books discussions should receive a greater proportion of high-divergent responses and a lower proportion of low-convergent responses. Instead, teachers with Great Books training asked questions which received a greater proportion of low-convergent responses (55.1%) and a lower proportion of high-divergent responses (14.65%), while teachers without Great Books training asked nearly an equal proportion of questions which received low-convergent (20.95%) and high-divergent (22.8%) responses. This may be attributed to the need to ask questions, such as low-convergent, which prepare students to give high-divergent responses or the need to ask easier (low-convergent) questions when more difficult (high-divergent) questions cannot be answered. This indicates that teachers' questioning strategies cannot depend upon one kind of question but that teachers must use a combination of different types of questions in order to guide students' comprehension. This suggests that an analysis of the sequential structure of teacher questions and student responses would need to be done to provide further insight into teachers' questioning strategies.

Finally, there were negligible to substantial variations in the proportions of the four types of responses to teacher questions among second grade

basal reading lessons taught to groups of students reading at different levels (Table 6f).

Insert Table 6f

The teacher asked questions which received proportionately more low-convergent responses in the group reading at the 2-2 level (48.3%), more high-convergent responses in the group reading at the 3-2 level (54.3%), more low-divergent responses in the group reading at the 2-1 level (7.4%), and more high-divergent responses in the group reading at the 3-1 level (13.7%). The differences were greatest between groups 2-2 and 3-2 for low-convergent responses (16.9%), between groups 3-2 and 2-2 for high-convergent responses (22.6%), between groups 2-2 and 2-1 for low-divergent responses (2.4%), and between groups 3-2 and 2-2 for high-divergent responses (6.4%). This indicates that the teacher varied her questioning strategies among the groups with respect to low- and high-convergent responses, but less so for high-divergent responses, and the least for low-divergent responses. These variations may be attributed to differences in student ability, but also to differences in text difficulty. The teacher asked more questions which received high-convergent responses and tended to ask more questions which received high-divergent responses in groups reading above grade level (groups 3-1 and 3-2). However, the teacher tended to ask more questions which received low-convergent responses in Group 2-2 than in Group 2-1 and more high-convergent and high-divergent respnses on Group 2-1 than in Group 2-2.

In summary, these teachers' questions varied with respect to the cognitive level and the number of student responses received between second and

sixth grade literature lessons, second and sixth grade basal reading lessons, between sixth grade basal and literature lessons, between teachers with and without Great Books training, and, for one teacher, among groups reading at different levels. This suggests that grade level, type of lesson for sixth grade, Great Books training, and ability level have an effect on the type of student responses received.

Summary of Results

This analysis of teachers' questioning strategies is part of a larger study which was done to examine the relationships among teacher questions, student responses, and text read. This report examines the variations in teachers' questioning strategies between grade levels (2nd and 6th), type of lesson (basal and literature), teaching training (with Great Books training and without Great Books training), and ability level (below, at, one semester above, and one year above grade level). Teachers' questions are described according to their function in the lesson discourse, their source, and their relationship to the type of students' responses received. Student responses are described according to their accuracy, the level of cognitive functioning, and their convergence or divergence.

The results, as summarized in Table 7, indicate negligible (1) to substantial (5) variations in teachers' questioning strategies between lessons. Negligible (1) and slight (2) variations are more likely due to chance variations that would normally occur from lesson to lesson. Some variation (3) is a possible variation between lessons but more than likely due to differences in story content rather than to differences in teacher questioning strategies. However, appreciable (4) and substantial (5) variations are great enough to indicate a definite difference in questioning strategies. Therefore, only appreciable and substantial variations will be used to identify true variations.

The four teachers in the study varied their questioning strategies in the following ways:

(1) Second and sixth grade teachers differed in their questions in basal lessons with respect to the source of their questions. Second grade teachers asked more script-based questions and sixth grade teachers asked more text-based questions.

(2) Second and sixth grade teachers differed in their questions in literature lessons with respect to the source of their questions, the accuracy of student responses, the number of student responses per question, the cognitive level of student responses, and the relationship of the number and cognitive level of student responses. Second grade teachers asked more script-based questions and their questions received no responses more often, more convergent responses, and more high cognitive level responses. Sixth grade teachers asked more text-based questions and their questions received more correct responses, more divergent responses, and more high-divergent responses.

(3) Second grade teachers varied their questions between basal and literature lessons with respect to the accuracy of student responses they received. Their questions received more correct responses during basal lessons and received no responses more often during literature lessons.

(4) Sixth grade teachers varied their questions between basal and literature lessons with respect to the number of student responses received and the relationship between the number and cognitive level of student responses. Their questions received more divergent responses and

more high-divergent responses during literature lessons and more high-convergent responses during basal lessons.

(5) Teachers with and without Great Books training differed in their questions during literature lessons with respect to the source of their questions and the accuracy of student responses, the number of student responses, the cognitive level of student responses, and the relationship between the number and the cognitive level. Teachers with Great Books training asked more text-based questions and their questions received no responses more often, more convergent responses, more high cognitive level responses, and more low-convergent responses. Teachers without Great Books training asked more text/script-based questions and their questions received more correct responses, more low-cognitive level responses, and more high-convergent responses.

(6) One second grade teacher varied her questions between groups of students reading at different levels with respect to the source of her questions, the accuracy of student responses, the cognitive level of student responses, and the relationship between the number and the cognitive level. With the group reading at 2-1 (below grade level), the teacher asked the most discourse-based questions and her questions received no responses the most often. With the group reading at 2-2 (at grade level), she asked the most script-based questions and her questions received the most high cognitive level responses and the most low-convergent responses. With the group reading at 3-1 (one semester above grade level), her questions received the most correct responses. With the group reading at 3-2 (one year above grade level), she asked the most text-based questions and her questions

received the most low-cognitive responses and the most high-convergent responses.

Generally speaking, teachers differ in their questioning strategies between grade levels and training and also vary their strategies between types of lessons and ability level of the reading group. Grade level seems to affect the source of teacher questions and the accuracy, the number, and the cognitive level of student responses during literature lessons. The type of lesson seems to affect the accuracy of student responses to teacher questions in the second grade and the number of student responses in the sixth grade. Great Books training seems to affect the source of teacher questions and the accuracy, the number, and the cognitive level of student responses. Finally, the ability of the reading groups seems to affect the source of teacher questions and the accuracy, the cognitive level, and the relationship between the number and the cognitive level. Now that the teachers' questions have been described and variations in strategies identified, possible reasons for these differences will be discussed.

Conclusions

Although the reasons for variations in questions can only be hypothesized from the data, the high degree of variations (i.e., appreciable and substantial) suggest that teachers have strategies for asking questions which go beyond merely evaluating student comprehension. If teachers were asking questions to simply test student knowledge, as commonly believed, then there should be either little or no variation or at least a predictable variation. This, as will be shown, is not the case. Further, the different characteristics of the lessons, which have been identified, suggest probable reasons for differences in questioning strategies. In addition, while these results only identify the questioning strategies of four teachers who probably do not represent all teachers or even all second or sixth grade teachers, they suggest dimensions along which teachers vary their questions in accomplishing reading lessons. Finally, the results suggest further areas of classroom discourse which need to be investigated, specifically, during reading lessons.

Durkin and other educational researchers claim that teachers only ask questions to evaluate students' comprehension. If teachers were only evaluating students' comprehension, then they would ask predominantly text-based questions to which the teacher knows the answer. In addition, such questions would more likely be convergent, i.e., receive single correct responses. Therefore, while answers to such questions may be at a high or a low cognitive level, they would be high-convergent or low-convergent. Low-convergent responses would be details explicitly stated in the text, and high-convergent responses would be inferences implicitly stated in the text. Further, it is expected that more low-convergent questions would

be asked during second grade lessons, and more high-convergent questions during sixth-grade lessons. Although the accuracy of student responses cannot be predicted, questions asked during literature lessons would probably receive more incorrect or no responses than during basal lessons since stories read during literature lessons may not be at the students' reading level. Further, questions asked during second grade lessons would probably receive more correct responses than during sixth grade lessons because second graders are still learning how to read. Finally, teachers with Great Books training are not expected to ask such questions because their goal is not evaluation of comprehension but development of thinking ability. Thus, they would ask more questions which receive high-divergent responses than teachers without Great Books training. However, as the results show, these lessons cannot be characterized in this way.

First of all, it is not enough to identify teacher questions as if they served only one purpose, to request a verbal response. Teacher questions did not simply ask for information; they served other purposes. Questions were frequently used to direct the verbal interaction. For example, "Would you read the next page please?" directs the discourse. Although this type of question classified as procedural, did not predominate in the lessons, all the teachers used questions for this purpose. They seem to occur more frequently when the teachers directed the students' oral reading, whether it was a basal or a literature lesson. Other questions did not receive a response or received agreement with the proposition stated. For example, "You have hundreds of secret hiding places?" or "They were the same as in the filmstrip weren't they?" These questions, classified discourse-related, seem to be statements or comments about the previous

response. They probably were used to control the interaction by maintaining students' attention and interest since the teachers' were acknowledging students' responses. Although the teachers' acknowledgement or evaluation of student responses was not analyzed for this report, it was found that all the teachers used question forms, i.e., declaratives with rising intonation and tag questions, to acknowledge student responses. In addition, the variations between lessons was not great enough to identify true differences in the need to maintain or control the verbal interaction, except in the case of groups reading at different levels in one second grade class. The teacher showed a greater need to maintain the discourse in the group reading below grade level. This is as expected because second graders are just learning the implicit rules of group interaction. Thus, the teachers used questions during classroom lessons to direct and maintain the interaction as well as to query students' recall of the story read.

Secondly, it is not enough to classify teacher questions as if they served a single purpose. Teacher questions may evaluate, motivate, and instruct all at the same time. It may be said that all questions can serve to evaluate student learning since teachers can determine student learning from their responses, but it cannot be said that questions are only used to evaluate.

Of the questions related to the story read, classified as substantive, results show that the teachers did more than evaluate student comprehension. All of the teachers asked script-based questions which asked students to recall their own experiences. This type of question could hardly be used for evaluation purposes since every student would give a different response.

The teachers were more than likely guiding the students' comprehension or motivating students by relating the story to the students' experience. Schema theorists suggest that readers reconstruct the meaning of what they read in just this way. The second grade teachers asked more script-based questions than sixth grade teachers in both basal and literature lessons and thus, felt a greater need to guide students' comprehension by relating the story to their experience. This is as expected since second graders' reading skills are not fully developed. Further, one second grade teacher asked more of such questions in the group reading at grade level. This is not as expected since the group reading below grade level should need the most guidance. However, other factors may contribute to the teachers' strategies, such as the story being read or the teachers' specific instructional goals. For example, one story may be more applicable to the students' experience than another, or the teacher may want students to identify with the characters in the story in order to understand their motives, etc. Further research would need to be done to determine how the text read and teachers' instructional goals affect teacher questioning strategies.

In addition, teachers asked text-script based questions which required students to make inferences about the story using their prior knowledge. These questions may be asked to evaluate the students' ability to make inferences but they can also be used to guide students' comprehension by having them draw upon their own experience to understand events in the story. In fact, these questions very often began with "Do you think" or "What do you think." This allows students to give a response based on their knowledge and experience regardless of the response expected by the teacher. This type of question can develop students' reasoning ability

as well as evaluate it. Further analysis of the sequence of questions and responses would need to be done to determine how the teachers used this type of question. All teachers asked this type of question to a similar degree, except for teachers without Great Books training during literature lessons. These teachers asked more text-script based questions than text-based, while in all other lessons they asked more text-based questions. This is probably due to the different instructional goals of the teachers. For example, during literature lessons the teachers may be more interested in developing students' thinking abilities while in basal lessons the goal may be comprehension or evaluation. Furthermore, these teachers asked more text-script based questions than teachers with Great Books training. This is not as expected since Great Books discussion involves the use of interpretive questions which are classified as text-script in this analysis. This may be due to the fact that only one of the literature lessons used a story from the Great Books series. Thus, the teachers may limit their use of interpretive questions to Great Books lessons rather than literature lessons in general. Further, teachers' instructional goals may vary between the two types of literature lessons. For example, during regular literature lessons, the teachers may be more interested in the students' appreciation of the story rather than in their interpretive skills. Thus, the teachers asked questions to guide students' comprehension, motivate or increase their interest, or develop their reasoning skills, as well as to evaluate their learning or thinking skills.

Lastly, teachers do not ask questions in a vacuum, i.e., without reference to the needs and the abilities of the students. Analysis of the

students' responses to questions indicates that teachers make on-the-spot decisions about what questions to ask.

While questions which received convergent responses, i.e., a single correct response, predominated in the lessons, all teachers asked questions which received divergent responses, i.e., more than one correct answer. Some teachers, however, asked questions which elicited divergent responses more than others. Sixth grade teachers asked more of such questions than second grade teachers during literature lessons and more during literature lessons than basal lessons. This is probably due to the difference in students' ability since sixth grade students are more proficient readers than second grade students and also to differences in the teachers' instructional goals, e.g., appreciation of literature versus comprehension development or evaluation. However, teachers with Great Books training did not ask more questions which elicited divergent responses as expected. This probably occurred because the teachers found that they could not limit themselves to one type of question. The teachers may have resorted to questions which elicited convergent responses because the students were unable to answer questions which required interpretive and divergent responses. Thus, the difficulty of the text and/or the ability of the students will effect the kinds of questions that are asked.

In addition, the teachers' questions elicited responses at both high and low cognitive levels. Low level responses did not predominate in the lessons as expected, but rather the proportions of low and high level responses were generally similar. Although there was little difference in the cognitive level of student responses between basal and literature lessons, there was a difference between second and sixth grade literature

lessons. Sixth grade teachers' questions received more responses at a high cognitive level. This may be attributed to the fact that the sixth grade students had more experience with literature and that stories read during literature lessons were more difficult for second grade students to read or to comprehend.

Further, although one second grade teacher asked more questions which elicited high level responses in a group reading a year above grade level as expected, she asked more questions which elicited a low level response in a group reading at grade level rather than below grade level. This may be attributed to differences in text difficulty so that the story for the group reading at grade level was more difficult to comprehend than the story for the other groups.

Questions asked by teachers without Great Books training elicited more high level responses while questions asked by teachers with Great Books training elicited more low level responses. This is not as expected, but provides additional support for teachers varying their questions because of text difficulty and the ability of the students. In addition, there was a relationship between the number and cognitive level of students responses. Responses to teachers' questions revealed all kinds of relationships -- low-convergent, low-divergent, high-convergent, and high-divergent. However, both convergent and divergent responses tended to be high. This indicates that the teachers did not limit their questions to querying students' memory for explicitly stated details or to the evaluation of students' comprehension. Further, the teachers' questions elicited different kinds of responses in varying degrees. Sixth grade teachers' questions elicited

more high-divergent responses during literature lessons than second grade teachers, more high-divergent responses during literature lessons than basal lessons, and more high-convergent responses during basal lessons. This is as expected since sixth graders' reading skills are more advanced. Because of this, the teachers' questions for basal and literature lessons differed more for sixth grade than for second grade.

However, the questions of teachers with Great Books training elicited more low-convergent responses and the questions of teachers with Great Books training elicited more high-divergent responses. Considering the purpose of Great Books discussion, this is not as expected, but this may be attributed to the difficulty students may have had with answering interpretive questions. Questions which elicit low-convergent responses may, in fact, be necessary to prepare students to answer higher order questions. Higher order questions may elicit responses that are high cognitive level, divergent, high-convergent, or high-divergent. Further analysis of the question-response sequences would need to be done to determine the function of such questions.

There is further indication that the needs and abilities of the students are a factor in teachers' questioning strategies. One second grade teacher asked questions which elicited more low-convergent responses in the group reading at grade level and more high-convergent responses in the group reading one year above grade level. The fact that differences were the greatest for these two groups along several dimensions indicates that for these particular lessons student ability and needs differed the most. Thus, the teacher seemed to vary her questions according to the immediate needs of the students for the particular story read.

The accuracy of student responses also varied between lessons. Sixth grade teachers' questions received more correct responses during literature lessons than second grade teachers, while second grade teachers' questions received more "no responses" than sixth grade teachers. This may mean that sixth grade teachers were more effective but it may also mean that the sixth grade teachers were asking easier questions. However, other results indicate that sixth grade teachers' questions received more high divergent responses, which indicates that sixth grade students were more able to answer teachers' higher order questions correctly. This is supported by the greater proportion of "no responses" received by the second grade teachers' questions. Their questions may have been too difficult, receiving "no responses" rather than incorrect responses, or teachers may have asked a series of questions in order to make the original question easier to answer. Although further analysis would need to be done, a general perusal of the data indicates that the latter was a frequent questioning strategy. This would be true because second grade students have not had as much experience reading literature and are still learning how to read.

In the same way, teachers with Great Books training asked more lower order questions and received more "no responses", while teachers without Great Books training asked more higher order questions and received more correct responses. The reasons should be the same. However, sixth grade students should be more able to answer questions correctly. Further analysis would need to be done to determine the reasons for "no responses".

Further, second grade teachers' questions received more "no responses" during literature lessons than basal lessons, but more correct responses

during basal lessons. This indicates that either basal stories are easier for second grade students to understand or the teachers asked harder questions during literature lessons. However, there is no indication that the teachers asked higher order questions more often during literature lessons. Therefore, the teachers probably asked a series of questions, only one of which received a response, in order to make a question easier to answer.

There is further indication that teachers make allowances for students' abilities. The questions of one second grade teacher received more correct responses in the group reading one semester above grade level and more "no responses" in the group reading below grade level. As before, "no responses" probably indicate the teachers' strategy for providing students success in answering questions. Also, the fact that the teachers' questions were more effective for the group reading one semester above grade level rather than a year above may mean that the teacher had higher expectations for the top group since more higher order questions were asked in this group. Thus, the teacher varied her questions according to the needs and abilities of the students.

Thus, teachers vary their questions depending upon the reading abilities of the students and, also, make on-the-spot decisions based on the needs of the students at that moment.

In summary, variations in the teachers' questioning strategies have been found to occur between lessons where stories were read and/or discussed. Although some variations were more than likely due to chance or to differences between stories, other variations were large enough to indicate differences between teachers' strategies for asking questions. The dimensions along which variations occurred were:

(a) the source of questions

(b) the number of student responses per teacher question

(c) the cognitive level of student responses

(d) the relationship between the cognitive level and number of student responses

(e) the accuracy of student responses.

The characteristics of the lessons which contributed to the variations were:

(a) grade level (2nd vs. 6th)

(b) type of lesson (basal vs. literature)

(c) teacher training (Great Books training vs. no Great Books training)

(d) reading ability (below, at, one semester above, one year above grade level).

Since the teachers' questions varied in different ways for each dimension according to the lesson characteristics, it was possible to identify reasons for the variations. Teachers' strategies were affected by their instructional goals, such as the appreciation of literature, etc., students' reading abilities, and students' needs at the moment. Therefore, the purpose of teachers' questions cannot be described merely in terms of evaluation of student learning. Teachers use questions for a multiplicity of purposes, including the direction and maintenance of discourse and the accomplishment of lesson objectives, as well as the evaluation of students' learning. In fact, it can be concluded that as teachers evaluate students' comprehension, they accommodate to the students' need and abilities and, thus, help students to answer questions successfully. Whether this is

a conscious instructional strategy remains for further research, but it seems to be the primary questioning strategy used by teachers. Further research which examines the question-response sequence would need to be done to determine the ways in which teachers help students to answer questions successfully and its effect on students' comprehension.

REFERENCES

Chou-Hare, V. and Pulliam, C. A. Teacher questioning: A verification and an extension. Journal of Reading Behavior, 1980, 12, 69-72.

Dunkin, M. J. and Biddle, B. J. The Study of Teaching. New York: Holt, Rinehart & Winston, 1974.

Durkin, D. What classroom observations reveal about reading comprehension instruction. Reading Research Quarterly, 1978, 14, 482-533.

Gall, M. D. The use of questions in teachirg. Review of Educational Research, 1970, 40, 707-721.

Green, J. L. Pedagogical style differences as related to comprehension performance: Grades one through three. Unpublished doctoral dissertation, University of California, Berkeley, 1977.

Guszak, F. J. Teacher questioning and reading. The Reading Teacher, 1967, 21, 227-234.

Hunkins, F. P. Involving Students in Questioning. Boston: Allyn and Bacon, 1976.

Hyman, R. T. Strategic Questioning. Englewood Cliffs, NJ: Prentice-Hall, 1979.

Morine-Dershimer, G. and Tenenberg, M. Participant perspectives of classroom discourse (Executive Summary). Hayward: California State University, 1981. (ERIC Document Reproduction Service No. ED 210 107).

Sanders, N. M. Classroom Questions: What Kinds. New York: Harper and Row, 1966.

Sirotnik, K. A. What you see is what you get: Consistency, persistency, and mediocrity in classrooms. Harvard Educational Review, 1983, 53, 16-31.

Taba, H. Teacher strategies and cognitive functioning in elementary school children (USOE Cooperative Research Project No. 2402). San Francisco, CA: San Francisco State University, 1966.

Appendix A: Reading Materials

Second Grade Basal Reading Texts:

Level 2-1: "The Secret Hiding Place." In Secrets, Level G.
Boston: Houghton Mifflin, 1974.
Level 2-2: "Mr. Picklepaw's Popcorn." In Rewards, Level H.
Boston: Houghton Mifflin, 1974.
Level 3-1: "The Whizz-a-roo Pitch." In Panorama, Level I.
Boston: Houghton Mifflin, 1974.
Level 3-2: "Speck." In How Is It Nowadays, Level J.
Boston: Houghton Mifflin, 1974.
Level 2-2: "Pip Squeak, Mouse in Shining Armor." In Tapestry, Level H.
Boston: Houghton Mifflin, 1979.

Sixth Grade Basal Reading Texts:

Level 7: "Puma and the Girl." In To Make a Difference, Level 14.
Lexington, Ma: Ginn, 1978.
Level 7: "A World to Come." In Encore, Level N.
Boston: Houghton Mifflin, 1979.

Second Grade Literature Texts:

"The Happy Lion." In Junior Great Books, Series 2.
Chicago, IL: The Great Books Foundation, 1976.
M. Miles. Annie and the Old One.
Boston: Little Brown and Co., 1971.

Sixth Grade Literature Texts:

K. Platt. Hey, Dummy.
New York: Dell, 1971.
E. Neville. It's Like This, Cat.
New York: Harper and Row, 1963.

Table 1a. Functions of Teacher Questions

Question Function	Basal Reading Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Procedural	23	11.5	7.9	13	6.5	6.1	+1.8
Substantive	274	137	92.1	213	106.5	94.0	-1.9

Table 1b. Functions of Teacher Questions

Question Function	Literature Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Procedural	22	11	6.8	3	1.5	2.5	+4.3
Substantive	292	146	93.2	112	56	97.6	-4.4

Table 1c. Functions of Teacher Questions

Question Function	Second Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Procedural	23	11.5	7.9	22	11	6.8	1.1
Substantive	274	137	92.1	292	146	93.2	-1.1

Table 1d. Functions of Teacher Questions

Question Function	Sixth Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Procedural	13	6.5	6.1	3	1.5	2.5	3.6
Substantive	213	106.5	94.0	112	56	97.6	-3.6

Table 1e. Functions of Teacher Questions

Question Function	Second and Sixth Grade Literature Lessons						
	Great Books Training			No Great Books Training			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Procedural	15	7.5	4.1	10	5	5.2	-1.1
Substantive	225	112.5	95.9	179	89.5	94.8	1.1

Table 1f. Functions of Teacher Questions

Procedural / Substantive	Second Grade Basal Reading Lessons							
	Groups by Reading Level							
	2-1		2-1		3-1		3-2	
	n	%						
	17	12.1						
2-1	24	87.9						
	% Diff.		n	%				
	3.2		11	8.9				
2-2	-3.2		113	91.1				
	% Diff.		% Diff.		n	%		
	-1.1		-4.3		19	13.2		
3-1	1.1		4.3		25	86.8		
	% Diff.		% Diff.		% Diff.		n	%
	-3.4		-6.6		-2.3		11	15.5
3-2	3.4		6.6		2.3		60	84.5

Table 2a. Sources of Teacher Questions

Question Source	Basal Reading Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Text	79	39.5	37.6	92	46	61.3	-23.7
Script	65	32.5	31.2	17	8.5	11.8	19.4
Text-Script	38	19	17.9	32	16	21.6	-3.7
Discourse	28	14	13.3	8	4	5.3	8.0

Table 2b. Sources of Teacher Questions

Question Source	Literature Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Text	79	39.5	34.2	55	27.5	62.1	-27.9
Script	64	32	30.5	4	2	5.2	25.3
Text-Script	40	20	21.2	14	7	17.8	3.4
Discourse	29	14.5	14.2	8	4	9.9	4.3

Table 2c. Sources of Teacher Questions

Question Source	Second Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Text	79	39.5	37.6	79	39.5	34.2	3.4
Script	65	32.5	31.2	64	32	30.5	0.7
Text-Script	38	19	17.9	40	20	21.2	-3.3
Discourse	28	14	13.3	29	14.5	14.2	-0.9

Table 2d. Sources of Teacher Questions

Question Source	Sixth Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Text	92	46	61.3	55	27.5	62.1	-0.8
Script	17	8.5	11.8	4	2	5.2	6.6
Text-Script	32	16	21.6	14	7	17.8	3.8
Discourse	8	4	5.3	8	4	9.9	-4.6

Table 2e. Sources of Teacher Questions

Question Source	Second and Sixth Grade Literature Lessons						
	Great Books Training			No Great Books Training			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Text	108	54	68.9	26	13	27.4	41.5
Script	33	16.5	13.9	35	17.5	21.8	-7.9
Text-Script	5	2.5	3.7	49	24.5	35.3	-31.6
Discourse	15	7.5	8.6	22	11	15.6	-7.0

Table 2f. Sources of Teacher Questions

Text Script Text-Script Discourse	Second Grade Basal Reading Lessons			
	Groups by Reading Level			
	2-1	2-1	3-1	3-2
2-1	n % 44 42.7 29 28.2 6 5.8 24 23.3			
2-2	% Diff. +7.7 -15.5 -2.9 +10.7	n % 36 35.0 45 43.7 9 8.7 13 12.6		
3-1	% Diff. -1.3 -6.7 -5.2 +13.2	% Diff. -9.0 +8.8 -2.3 +2.5	n % 48 44.0 38 34.9 12 11.0 11 10.1	
3-2	% Diff. -3.6 -3.3 -7.1 +14.0	% Diff. -11.3 +12.2 -4.2 +3.3	% Diff. -2.3 +3.4 -1.9 +1.6	n % 25 46.3 17 31.5 7 12.9 5 9.3

Table 3a. Accuracy of Student Responses

Student Responses	Basal Reading Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Correct	143	71.5	78.5	103	51.5	71.9	6.6
Incorrect	12	6	6.6	16	8	12.2	-5.6
No Response	27	13.5	14.9	22	11	15.9	-1.0

Table 3b. Accuracy of Student Responses

Student Responses	Literature Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Correct	118	59	66.7	58	29	79.6	-12.9
Incorrect	7	3.5	4.3	4	2	5.9	-1.6
No Response	58	29	29.6	11	5.5	14.5	15.1

Table 3c. Accuracy of Student Responses

Student Responses	Second Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Correct	143	71.5	78.5	118	59	66.7	11.8
Incorrect	12	6	6.6	7	3.5	4.3	2.3
No Response	27	13.5	14.9	58	29	29.6	-14.7

Table 3d. Accuracy of Student Responses

Student Responses	Sixth Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Correct	103	51.5	71.9	58	29	79.6	-7.7
Incorrect	16	8	12.2	4	2	5.9	6.3
No Response	22	11	15.9	11	5.5	14.5	1.4

Table 3e. Accuracy of Student Responses

Student Responses	Second and Sixth Grade Literature Lessons						
	Great Books Training			No Great Books Training			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Correct	90	45	66.9	76	38	79.3	-12.4
Incorrect	2	1	1.0	9	4.5	9.2	-8.2
No Response	45	27	32.6	15	7.5	11.5	21.1

Table 3f. Accuracy of Student Responses

Correct Incorrect No Response	Second Grade Basal Reading Lessons							
	Groups by Reading Level							
	2-1		2-1		3-1		3-2	
	n	%						
	54	68.4						
2-1	2	2.5						
	23	29.1						
	% Diff.		n	%				
	-6.0		67	74.4				
2-2	-2.0		4	4.5				
	+8.0		19	21.1				
	% Diff.		% Diff.		n	%		
	-11.2		-5.2		78	79.6		
3-1	-0.6		+1.4		3	3.1		
	+11.8		+3.8		17	17.3		
	% Diff.		% Diff.		% Diff.		n	%
	-3.0		+3.0		+8.2		35	71.4
3-2	-3.6		-1.6		-3.0		3	6.1
	+6.6		-1.4		-5.2		11	22.5

Table 4a. Number of Student Responses to Each Teacher Question

Number of Responses	Basal Reading Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Convergent	120	60	77.7	83	4.5	68.6	9.1
Divergent	23	11.5	14.8	20	10	16.2	-1.4

Table 4b. Number of Student Respones to Each Teacher Question

Number of Responses	Literature Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Convergent	97	48.5	77.6	41	20.5	66.6	11
Divergent	21	10.5	16.5	17	8.5	27.2	-10.7

Table 4c. Number of Student Responses to Each Teacher Question

Number of Responses	Second Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Convergent	120	60	77.7	97	48.5	77.6	0.1
Divergent	23	11.5	14.8	21	10.5	16.9	-2.1

Table 4d. Number of Student Resonses to Each Teacher Question

Number of Responses	Second and Sixth Grade Literature Lessons						
	Great Books Training			No Great Books Training			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Convergent	83	4.5	68.6	41	20.5	66.6	2.0
Divergent	20	10	16.2	17	8.5	27.2	-11.0

Table 4e. Number of Student Responses to Each Teacher Question

Number of Responses	Second and Sixth Grade Literature Lessons						
	Great Books Training			No Great Books Training			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Convergent	72	36	78.7	66	33	65.6	13.2
Divergent	18	9	19.7	20	10	24.4	-4.7

Table 4f. Number of Student Responses to Each Teacher Question

Convergent Divergent Noncodable	Second Grade Basal Reading Lessons			
	Groups by Reading Level			
	2-1	2-1	3-1	3-2
2-1	n / %			
	45 / 80.3			
	9 / 16.1			
	2 / 3.6			
2-2	% Diff.	n / %		
	0	57 / 80.3		
	2.0	10 / 14.1		
		4 / 5.6		
3-1	% Diff.	% Diff	n / %	
	+2.5	+2.5	63 / 77.8	
	-2.4	-4.4	15 / 18.5	
			3 / 3.7	
3-2	% Diff.	% Diff.	% Diff.	n / %
	+1.4	+1.4	-1.1	30 / 78.9
	+2.9	+0.9	+5.3	5 / 13.2
				3 / 7.9

Table 5a. Cognitive Level of Student Responses

Cognitive Level	Basal Reading Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Low	62	31	43.8	38	19	34.7	9.1
High	79	39.5	54.8	56	28	58.5	-3.7

Table 5b. Cognitive Level of Student Responses

Cognitive Level	Literature Lessons						
	Second Grade			Sixth Grade			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Low	56	28	47.2	18	9	30.2	17.0
High	62	31	52.7	37	18.5	64.7	-12.0

Table 5c. Cognitive Level of Student Responses

Cognitive Level	Second Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Low	62	31	43.8	56	28	47.2	-3.4
High	79	39.5	54.8	62	31	52.7	2.1

Table 5d. Cognitive Level of Student Responses

Cognitive Level	Sixth Grade						
	Basal Reading Lessons			Literature Lessons			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Low	38	19	34.7	18	9	30.2	4.5
High	56	28	58.5	37	18.5	64.7	-6.2

Table 5e. Cognitive Level of Student Responses

Cognitive Level	Second and Sixth Grade Literature Lessons						
	Great Books Training			No Great Books Training			
	Total N	Avg. n	Avg. %	Total N	Avg. n	Avg. %	Diff%
Low	48	24	53.3	26	13	24.3	29.0
High	40	20	43.4	59	29.5	73.9	-30.6

Table 5f. Cognitive Level of Student Responses

Low High Noncodable	Second Grade Basal Reading Lessons Groups by Reading Level							
	2-1		2-1		3-1		3-2	
	n	%						
	24	44.4						
2-1	30	55.6						
	0	0.0						
	% Diff.		n	%				
	-6.3		34	50.7				
2-2	+7.8		32	47.8				
			1	1.5				
	% Diff.		% Diff.		n	%		
	+3.1		+9.4		31	41.3		
3-1	-0.4		-8.2		42	56.0		
					2	2.7		
	% Diff.		% Diff.		% Diff.		n	%
	+7.3		+13.6		+4.2		13	37.1
3-2	-7.3		-15.1		-6.9		22	62.9
							0	0.0

Table 6a. Relationships between Number and Cognitive Level of Student Responses

	Basal Reading Lessons						
	Second Grade			Sixth Grade			%Diff
	N	Avg. n	Avg. %	N	Avg. N	Avg. %	
Low-Convergent	55	27.5	39.5	34	17.0	34.0	+5.5
High-Convergent	64	32	45.5	43	21.5	48.2	-2.7
Low-Divergent	6	3	4.5	4	2	4.0	+0.5
High-Divergent	15	7.5	10.5	13	6.5	13.8	-3.3

Table 6b. Relationship between the number and the cognitive level of student responses to teacher questions

	Literature Lessons						
	Second Grade			Sixth Grade			%Diff
	N	Avg. n	Avg. %	N	Avg. N	Avg. %	
Low-Convergent	49	24.5	41.4	15	7.5	34.6	+6.8
High-Convergent	48	24	40.9	17	8.5	32.5	+8.4
Low-Divergent	7	3.5	59	3	1.5	7.2	-1.3
High-Divergent	14	7	11.8	13	6.5	25.7	-13.9

Table 6c. Relationship between the number and the cognitive level of student responses to teacher questions

	Second Grade Lessons						
	Basal Reading			Literature			%Diff
	N	Avg. n	Avg. %	N	Avg. N	Avg. %	
Low-Convergent	55	27.5	39.5	49	24.5	41.4	-1.9
High-Convergent	64	32	45.5	48	24	40.9	+4.6
Low-Divergent	6	3	4.5	7	3.5	5.9	-1.4
High-Divergent	15	7.5	10.5	14	7	11.8	-1.3

Table 6d. Relationship between the number and the cognitive level of student responses to teacher questions

	Sixth Grade Lessons						
	Basal Reading			Literature			%Diff
	N	Avg. n	Avg. %	N	Avg. N	Avg. %	
Low-Convergent	34	17	34.0	15	7.5	34.6	-0.6
High-Convergent	43	21.5	48.2	17	8.5	32.5	+15.7
Low-Divergent	4	2	4.0	3	1.5	7.2	-3.2
High-Divergent	13	6.5	13.8	13	6.5	25.7	-11.9

Table 6e. Relationship between the number and the cognitive level of student responses to teacher questions

	Great Books Training			No Great Books Training			%Diff
	N	Avg. n	Avg. %	N	Avg. N	Avg. %	
Low-Convergent	42	21	55.1	22	11	20.95	+34.15
High-Convergent	21	10.5	20.6	44	22	52.8	-32.2
Low-Divergent	6	3	9.65	4	2	3.45	+6.2
High-Divergent	12	6	14.65	15	7.5	22.8	-8.15

Table 6f. Relationship Between the Number and the Cognitive Level of Student Responses to Teacher Questions

Low-Convergent High-Convergent Low-Divergent High-Divergent	Second Grade Basal Reading Lessons			
	Groups by Reading Level			
	2-1	2-1	3-1	3-2
2-1	n % 20 37.0 25 46.3 4 7.4 5 9.3			
2-2	% Diff. -11.3 +14.6 +2.4 -5.7	n % 29 48.3 19 31.7 3 5.0 9 15.0		
3-1	% Diff. 0.0 +2.5 +1.9 -4.4	% Diff. +11.3 -12.1 -0.5 +1.3	n % 27 37.0 32 43.8 4 5.5 10 13.7	
3-2	% Diff. +5.6 -8.0 +1.7 +0.7	% Diff. +16.9 -22.6 -0.7 +6.4	% Diff. +5.6 -10.5 -0.2 +5.1	n % 11 31.4 19 54.3 2 5.7 3 8.6

Table 7. Summary of Variations in Teacher Questions

Table	a		b		c		d		e		f			
Lessons	Basal		Literature		2nd Grade		6th Grade		Literature		2nd Grade			
	Grade 2nd - 6th		Grade 2nd - 6th		Lesson B - L		Lesson B - L		Great Books T -- NT		Reading Group 2^1	2^2	3^2	3^2
1. Functions														
Procedural	2		2		1		2			1		3		+3
Substantive		2		2		1		2	1			+3		3
2. Sources														
Text		5		5	2			1	5*			5*		+4
Script	5		5		2		3			3	5*	+5*		
Text-Script		2	2			2	2			5*	3			+3
Discourse	3		2			1		2		3	+4			4
3. Accuracy														
Correct	3			4	4			3		4	4		+4*	
Incorrect		3		2	2		3			3	2			+2
No Response		1	5			4	2		5		+4		4*	
4. Number														
Convergent	3		4		2		2		4*		+2	+2	2	
Divergent		2		4		2		4		2			+3	3
5. Cognitive Level														
Low	3		5			2	2		5*			+4*		4
High		2		4	2			3		5*		5*		+5
6. Cognitive Level and Number														
Low-Convergent	3		3			2		1	5*			+5*		5
High-Convergent		2	3		2		5			5		5		+5
Low-Divergent	1			2		2		2	3		+2	2		
High-Divergent		2		4		2		4		3		+3		3

Key for Table 7

B = Basal lessons

L = Literature or Great Books lessons

T = Lessons taught by teachers with Great Books training

NT = Lessons taught by teachers without Great Books training

+ = Group with the largest proportion

* = Unexpected result

How to Interrupt Table 7

1. Column letters and row numbers identify the corresponding table withing the text, e.g., for row 1 and column a, refer to Table 1a.

2. Columns identify the lessons with the larger proportion, e.g., for basal lessons, 2nd grade teachers asked more procedural questions than sixth grade teachers.

3. Numbers within columns indicate the degree of variation, e.g., 2 indicates a slight variation (refer to key on page 5) so that, during basal lessons, the 2nd grade teachers asked only slightly more procedural questions than sixth grade teachers.

4. In the last column (f), the groups with the greatest difference is identified, e.g., for 2nd grade basal lessons, the greatest difference in the proportion of procedural questions was between groups reading at the 3-2 and 2-2 levels. The teacher asked the most procedural questions in the group reading at the 3.2 level, although there was only some variation.

5. An asterisk (*) indicates an unexpected result which is discussed under Results and Interpretations.